Ranunculus **arcuans**, n. sp., caule 10–17 cm. longo repente pilis late patentibus hirsuto; foliis radicalibus longius petiolatis quam caulinis, omnibus ternatifidis dense hirsutis in facie inferiore supra sparse pilosis; foliolis 3-lobatis; lobis grosse dentatis; floribus parvis; sepalis reflexis subtus hirsutis supra glabris; achaeniis in capite globoso prominenter marginatis margine dorsali rotundatis, margine ventrali vel minus rotundatis vel rectiusculis, faciebus planis, rostro in apicem arcuatam attenuato.

Stem 10–17 cm. long, repent, hirsute with bristling widely spreading hairs: radical leaves longer-petioled than the stem-leaves, all ternatified, densely hirsute on the lower side, sparingly pilose on the upper; leaflets 3-lobed, lobes coarsely toothed: flowers small: sepals reflexed, hirsute on the lower side, glabrous above: achenes in a globose head, prominently margined, dorsal margin rounded, ventral much less so or nearly straight; faces flat; beak attenuate into a hooked tip.— China: Province of Hupeh, 1885–88, *A. Henry*, no. 4039 (type in Gray Herb.); Province of Fukien, 1904, *Hongkong Herbarium*, no. 2317.

This plant has a low and repent habit as contrasted with *R. pensylvanicus* L., which is high and erect. The achenes of these two species are more or less alike but the style in the Chinese plant is longer than in the American and conspicuously hooked. The achenes of the Chinese plant are also prominently margined and the shape of the head of achenes is globose.

Shanghai, China.

## GALIUM PILOSUM AND ITS VARIETIES.

C. A. Weatherby and S. F. Blake.

Ever since 1841 the traditional treatment of *Galium pilosum* has been that adopted in Torrey and Gray's Flora of North America, distinguishing a typical, wide-spread variety with pubescent stem and commonly oval leaves, and a southern one nearly or quite glabrous and with narrower, more oblong leaves. The recent collection by one of us, on Cape Cod, of two apparently different forms has led to a study of the forms of the species which shows that at least one more variety can profitably be recognized, and also leads to what we may hope to be the final retirement from our lists of the name *Galium bermudense* L. which has been associated with this and with two or three other species of *Galium* and *Relbunium* within recent years.

All the material of *Galium pilosum* in the Gray Herbarium and the Herbarium of the New England Botanical Club from north of a line running from western North Carolina and adjacent Kentucky to Arkansas and Texas has the stem more or less pubescent on the angles, usually densely so but sometimes only sparsely, with generally straightish pilose or pilose-hispid hairs, usually reaching up to or into the inflorescence, but sometimes confined to the lower portion of the plant. Occasionally some of the hairs are more or less recurved or, more rarely, inflexed. In the Cape Cod area, in the sand-plain regions of Connecticut and New Jersey and in the mountains of North Carolina occurs an extreme of this form having the sides of the stem as well as the angles more or less densely pubescent. At first it seemed that this plant might well be distinguished as a variety, but careful study of the available material has shown too great a proportion of specimens variously intermediate between the two extremes to make it desirable, in the present state of our knowledge, to attempt to separate them, although further field study may yet make this possible. The following specimens may be cited as representative of this more pubescent extreme: — NEW JERSEY: sand-hills, Atlantic City, July 14, 1870, *C. F. Parker.* NORTH CAROLINA: summit of Cedar Cliff Mt., alt. 3400 ft., July 16, 1898, *Biltmore Herb.* no. 3498b. To the less pubescent of these two forms belongs the Aiton type of *Galium pilosum* (New York, *Dr. Martin*) in the British Museum.

From Virginia to Florida and Texas there occur two very distinct varieties of *G. pilosum*, hitherto confused under the name var. *puncticulosum* (Michx.) T. & G. One of these has oval leaves as in the typical form of the species, pubescent with incurved, short, stiff hairs, and stem more or less densely beset on the angles with short, incurved, hook-like hairs distinctly harsher than the hairs of the typical form; the other, with more narrowly elliptic leaves and absolutely glabrous stem, might conceivably be regarded as specifically distinct but seems on the whole, from its identity in all other characters and from the presence of an occasional intermediate, better considered as worthy only of varietal rank. Dr. H. Lecomte and M. F. Gagnepain of the Paris Museum, to whom sketches and descriptions of these two forms were sent, have kindly examined the Michauxian type of

*Galium puncticulosum* and find it to be the former; for the latter, the varietal name *laevicaule* may appropriately be used.

The disposition of Linnaeus's *Galium bermudense* has always been a matter of dispute to botanists and a full identification of its elements has never previously been made. It was described thus: —

"GALIUM foliis quaternis linearibus obtusis, ramis ramosissimis. Apariñe foliis quaternis obtusis laevibus. *Gron. virg.* 16. Rubia tetraphylla glabra, latiore folio, bermudensis, seminibus binis atropurpureis. *Pluk. alm.* 324. *t.* 248. *Raj. suppl.* 261.

*Habitat* in Virginia."[1]

The Gronovian name is based on *Clayton* 313 in the British Museum which is the less pubescent phase of the typical form of *Galium pilosum*, very similar to Aiton's type. Plukenet's plant, still preserved at the British Museum, is *Relbunium hypocarpium* (L.) Hemsl.[2] with which it has previously been identified by Mr. Britten, who takes up for it the name *Relbunium bermudense* (L.) Britten.[3] Ray's plant, which seems never to have been examined hitherto, is *Galium circaezans* Michx., collected in Maryland by Krieg or Vernon. As if this confusion were not enough, we find in Linnaeus's own description a character ("foliis . . . . linearibus") which could by no possibility apply to any of these three species. Nor is there any specimen named *G. bermudense* in the Linnaean herbarium. Finally, the specific name "bermudense" taken from Plukenet's polynomial is quite at variance with the habitat, Virginia, attributed to the species by Linnaeus.

When we come to examine the treatment of *Galium bermudense* by authors subsequent to Linnaeus, we find an absolute lack of uniformity. Walter copies the Linnaean description without comment. Michaux has it not, but describes as new *G. puncticulosum*,[4] quoting *G. purpureum* Walt. (nec L.) as synonymous and Clayton's 313 as doubtfully identical. Willdenow[5] altered the name to *G. bermudianum* without changing the description and, in the fashion of some modern botanists, added the "popular" name "Bermudisches Labkraut" for a species whose habitat is still given as Virginia. Pursh[1] retains the name but gives a description applicable only to *G. puncticulosum* Michx., which in fact he cites as a synonym, and has *G. pilosum* as a distinct species. Pursh's action consequently cannot be taken as determining the application of the name, since he associates it (in the form *bermudianum*) with a plant not an element of the original Linnaean species. With Torrey,[2] Elliott[3] and other early writers on American botany, *G. bermudense* or *G. bermudianum* was a species of considerable uncertainty. In the Prodromus[4] *G. bermudianum* Pursh was referred to *G. puncticulosum* Michx., of which *G. pilosum* was made a variety. In Torrey & Gray's Flora of North America[5] "*G. bermudense* Linn. *spec.* 1. p. 105, as to syn. *Gronov.*, but not of *Pluk. alm. t.* 248" was referred to *G. pilosum*, var. *puncticulosum*, and the statement was made that "the name of *G. Bermudense* should be retained for the 'Rubia tetraphylla glabra, latiore folio, Bermudensis' etc. of Plukenet." In the Synoptical Flora,[6] however, "*G. Bermudense*, L. Spec. i. 105, as to syn. Pluk." was referred to typical *G. pilosum* and "*G. Bermudense*, L. l. c. as to syn. Gronov." to its var. *puncticulosum*. In Britton & Brown's Illustrated Flora, ed. 1[7] *G. bermudense* appears as a doubtful synonym of *G. pilosum*, but in the second edition[8] we find *G. bermudense* displacing *G. hispidulum* Michx. as the name for that relbunioid *Galium*.

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[1] Sp. Pl. i. 105 (1753).

[2] The species was named *Valantia hypocarpa* by Linnaeus in 1759 without reference to Plukenet's plant. Its chief synonyms are: — *Valantia hypocarpa* L. Pl. Jam. Pug. 30 (1759): *V. hypocarpia* L. Syst. ed. 10. ii. 1307 (1759): *Relbunium hypocarpium* Hemsl. Biol. Centr. Amer. Bot. ii. 63 (1881). As the species was first published as *Valantia hypocarpa*, its specific name under *Relbunium* should be written "*hypocarpum*."

[3] Journ. Bot. xlvii. 42 (1909).

[4] Fl. Bor.-Am. i. 80 (1803).

[5] Sp. Pl. i. pt. 2. 596 (1798).

To recapitulate: — *Galium bermudense* L. as originally published included *G. pilosum*, *G. circaezans*, and *Relbunium hypocarpum*, all of which would be excluded by its description, and its name was in contradiction with the habitat assigned it. It has since been identified, in whole or in part, with *Galium pilosum*, *G. puncticulosum*, *G. hispidulum*, and *Relbunium hypocarpum*. It seems to the writers that under the circumstances the name *Galium bermudense* L. had best be relegated forever to the limbo of *nomina confusa*.

The varieties of *Galium pilosum* will then stand as follows: —

* *Stem from densely pilose all over to sparsely spreading-pilose or spreading-hispid-pilose on the angles below.*

G. PILOSUM Ait. Hort. Kew i. 145 (1789); Willd. Sp. Pl. i. pt. 2. 599 (1798); Pursh, Fl. Am. Sept. i. 104 (1814); T. & G. Fl. N. Am. ii.

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[1] Fl. Am. Sept. i. 104 (1814).

[2] Fl. N. & Mid. U. S. i. 169 (1824).

[3] Sk. i. 196 (1816).

[4] iv. 601 (1830).

[5] ii. 24 (1841).

[6] i. pt. 2. 37 (1884).

[7] iii. 221 (1898).

[8] iii. 266 (1913).

24 (1841) excl. syn. Walt.; Gray, Syn. Fl. i. pt. 2. 37 (1884) excl. syn. L. and Walt. *G. bermudense* L. Sp. Pl. i. 105 (1753), as to syn. Gronov. and habitat only. *G. bermudianum* Willd. Sp. Pl. i. pt. 2. 596 (1798), as to syn. Gronov. and habitat only. *G. puncticulosum, β. pilosum* DC. Prod. iv. 601 (1830). *G. rotundifolium* L. *ϑ. bermudense* Ktze. Rev. i. 282, 283 (1891), at least in part. *G. rotundifolium ϑ. bermudense* f. *pilosum* Ktze. l. c. 282.— Southern N. H. and southern Vt. to D.C. and in the mts. to N. C. and Ky., west to Ill., Kan., and Tex. Representative specimens examined: — Virginia: along Peak Creek, Peak Mtn., alt. 2200 ft., July 16, 1892, *J. K. Small;* Fall Creek, alt. 585 ft., July, 1893, *A. A. Heller*, no. 1108 (this specimen matches *Clayton* 313 fairly well). West Virginia: rocky hillside near Travellers' Repose, Sept. 19, 1904, *Greenman*, no. 310. Kentucky: Poor Fork P. O., Harlan Co., Aug., 1893, *T. H. Kearney, Jr.*, no. 233. Texas: between Bejar and el Rio de la Trinidad, May, 1828, *Berlandier*, no. 1578.

* * *Stem merely finely incurved-uncinate on the angles or glabrous.*

Var. puncticulosum (Michx.) T. & G. Stem finely and usually densely incurved-uncinate on the angles, at least below; leaves oval, 1–2.3 cm. long, 4–10 mm. wide, 2–2½ times as long as wide, their hairs incurved-uncinate like those of the stem.— Fl. N. Am. ii. 24 (1841) in part; Gray, Syn. Fl. i. pt. 2.37 (1884) in part. *G. purpureum* Walt. Fl. Car. 87 (1788), not L. *G. puncticulosum* Michx. Fl. Bor. Am. i. 80 (1803), excl. Clayt. no. 313. *G. punctatum* Pers. Syn. i. 128 (1805). — Virginia: Bedford Co., Aug. 1871, *A. H. Curtiss.* Georgia: Bullock Co., dry pine barrens, June 26, 1901, *R. M. Harper*, no. 947. Florida: Duval Co., roadside, June 10, 1902, *A. Fredholm*, no. 5290; Lake Co., high pine land near Eustis, July 1894, *G. V. Nash*, no. 1383; without definite locality, *Chapman.* Mississippi: Biloxi, July 1900, *S. M. Tracy* " = 4485." A specimen from dry woods, Athens, Ga., June 25, 1900, *R. M. Harper*, no. 38, is intermediate between this variety and the typical form.

Var. **laevicaule** n. var., caule omnino glabro; foliis anguste ellipticis 1.2–2.8 cm. longis 3–7 mm. latis, longitudine quam latitudine 2½–4-plo majore, sparse pilosis, pilis non valde incurvatis.

Stem glabrous throughout; leaves narrowly elliptic, 1.2–2.8 cm. long, 3–7 mm. wide, 2½–4 times as long as wide, sparsely pilose with hairs which are not strongly incurved.— Var. *puncticulosum* T. & G.

l. c. and subsequent authors, in part.— VIRGINIA: Norfolk, *Dana.* FLORIDA: low fertile ground near Jacksonville, June 18, 1898, *A. H. Curtiss,* no. 6420 (TYPE, in Gray Herb.); moist places, near Eustis, May, 1894, *G. V. Nash,* no. 838. TEXAS: ("floribus albis") Houston, June 1843, *Lindheimer.* A specimen from dry hillsides and woods, Alexandria, La., May 31, 1899, *C. R. Ball,* no. 514, is intermediate between this variety and the typical form.

# THE REPRESENTATIVES OF TRISETUM SPICATUM IN EASTERN AMERICA.

M. L. FERNALD.

TRISETUM SPICATUM (L.) Richter, var. **pilosiglume**, n. var., culmis densissime tomentosis 1.5–5 dm. altis; foliis plus minusve pilosis, vaginibus tomentosis, pilis reflexis; paniculis plerumque argenteo-viridibus rare subviolaceis deinde albido-brunneis 2–7 cm. longis valde interruptis; spiculis 2–3-floris; glumis pilosis, inferiore lanceolato-attenuata 3.5–4 mm. longa, superiore ovato-lanceolata subaristata 3.5–4.7 mm. longa; lemmatibus 4.6–6.3 mm. longis lanceolatis apice laciniis setiformibus valde bipartitis; palea lemmate paullo brevioribus apice laciniis setiformibus valde bipartita.

Culms densely tomentose, 1.5–5 dm. high: leaves more or less pilose: the sheaths tomentose with reflexed hairs: panicles mostly silvery-green, rarely somewhat violaceous, finally whitish-brown, 2–7 cm. long, obviously interrupted: spikelets 2–3-flowered: glumes pilose; the lower lance-attenuate, 3.5–4 mm. long; the upper ovate-lanceolate, subaristate, 3.5–4.7 mm. long: lemmas 4.6–6.3 mm. long, lanceolate, obviously 2-cleft at apex into setiform segments: palea a little shorter than the lemma, its apex 2-parted like the lemma.— Labrador and Newfoundland to northern New England and Ontario. LABRADOR: Rama, August 20–24, 1897, *J. D. Sornborger,* no. 240, in part; Okkak or Hebron, 1853, *Moravian Bros.*; Hopedale, August 4–6, 1897, *Sornborger,* no. 241; limestone and calcareous sandstone terraces, Blanc Sablon, August 1, 1910, *Fernald & Wiegand,* no. 2,569. NEWFOUNDLAND: island off Pike's Arm, July 19, 1911, *Fernald, Wiegand & Bartram,* no. 4,593 (TYPE in Gray Herb.); rocks, Black Island, July 20, 1911, *Fernald, Wiegand & Bartram,* no. 4,594; dry sea-cliffs, Tilt Cove, August 20, 1911, *Fernald, Wiegand & Darlington,* no. 2,568; dry limestone barrens, upper slopes and tablelands, alt. 200–300 m.,